# OBSERVATIONS OF WILDLIFE AND WILDLIFE HABITAT IN AUYUITTUQ NATIONAL PARK RESERVE, BAFFIN ISLAND, 1985-87

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# OBSERVATIONS OF WILDLIFE AND WILDLIFE HABITAT IN AUYUITTUQ NATIONAL PARK RESERVE, BAFFIN ISLAND, 1985-87

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## ABSTRACT

A reconnaissance level survey of the wildlife and wildlife habitat in Auyuittuq National Park Reserve, Baffin Island, was conducted from 1985-87. One species of fish, 23 species of birds, and 9 species of mammals were found during the surveys. Population densities of all species appeared to be low and most species of terrestrial wildlife were associated with the rather limited distribution of continuous vegetation. Such habitat covered only 15% of the park and was restricted mainly to lower elevations (<500 m) in the fiords and valleys. Most abundant birds were snow buntings (Plectrophenax nivalis), Lapland longspurs (Calcarius lapponicus), water pipits (Anthus spinoletta), Canada geese (Branta canadensis), snow geese (Chen caerulescens), and glaucous gulls (Larus hyperboreus). Typical terrestrial mammals were arctic hares (Lepus arcticus) and lemmings (Lemmus sibiricus, Dicrostonyx torquatus). Preferred habitats of the 5 commonly observed species were documented. Economically important or sensitive species such as barren-ground caribou (Rangifer tarandus groenlandicus), gyrfalcons (Falco rusticolus), and peregrine falcons (Falco peregrinus) exist at very low densities in the park. Areas of importance to caribou, and nesting geese, gulls, and raptors, are mapped. Four areas of apparent significance to wildlife are delineated: (1) the southwestern part of the park, (2) the Owl River Valley, (3) Nedluksiak Fiord - Isurtuq River, and (4) the Kivitoo Peninsula. Our present knowlege of the wildlife resources of the park is poor and recommendations are presented on how information gaps can be filled.

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## INTRODUCTION

Information on the abundance and distribution of wildlife and wildlife habitat is needed to plan effective conservation programs for our national parks. For Auyuittuq National Park Reserve, Baffin Island, wildlife-related information is sparse or lacking. Earlier studies in the region include the exploratory work of Soper (1928, 1944, 1946), more intensive investigations conducted in Pangnirtung Pass and vicinity by Watson in 1953 (Watson 1956, 1957a&b, 1962, 1963), and the reconnaissance level survey of Elliott (1973). Murphy (1973) reported briefly on the distribution of economically important species of wildlife in the vicinity of Cumberland Sound (including the southern part of the park) and Kemp (1976) indicated traditional hunting, trapping, and fishing areas used by the Inuit of the region. Wood (1974) and Drolet (1978) summarized records of wildlife harvest in or near the park, and sightings of wildlife reported by park wardens were summarized by Aningmiuq (1983). In general, studies have been greatly hindered by the inaccessibility of the park, ruggedness of the terrain, and the extremely low population densities of most species of wildlife.

During natural resource surveys in or near Auyuittuq National Park Reserve in 1985-87, we visited several areas of the park which were largely inaccessible to previous workers. Although our observations of wildlife and wildlife habitat suffer from many of the same constraints and shortcomings as the studies previously listed, we believe that they add to our understanding of the distribution and abundance of wildlife in the park.

## STUDY AREA

Auyuittuq National Park Reserve covers 21,470 $km^2$ of the Cumberland Peninsula of Baffin Island (Figure 1). It is characterized by a rugged, heavily glaciated landscape, a large ice cap, and a harsh arctic climate. About 40% of the park is covered by permanent ice, including the Penny Ice Cap (>5,000 $km^2$ in area), and numerous smaller ice caps and glaciers. Other major land cover types are barren or sparsely vegetated rock (38%), relatively continuous vegetation (15%), salt-water fiords (5%), and fresh-water lakes (2%) (Hines et al. 1988).

Elevations in the park range from sea level to over 2100 m. In many places, ice-free highlands are characterized by bedrock outcrop that is mantled by a thin layer of unconsolidated till, colluvium (scree), or weathered bedrock (Dyke et al. 1982). Typical mountain landforms such as cirques, horns, and aretes are well-developed, and high vertical rock walls (occasionally exceeding 1000 m in height) are present (Wilson 1976). On the northwest and south sides of the Penny Ice Cap, till deposits occur on a high plateau. The land has been deeply dissected by glaciers, and numerous valleys and fiords typically have U-shaped forms. Scree slopes, consisting of accumulated rock debris, form at the base of steep valley and fiord walls, and the moraines of hanging glaciers are also found in some of the deeper valleys and fiords. Sands and gravels wash away from glaciers and accumulate on the bottoms of some valleys. Many of the larger streams are braided near their mouths because of the abundance of this fluvium. Marine sediments, exposed when the land rose above sea-level, are found near the heads of some of the fiords and on the lowlands of the Kivitoo Peninsula. Lacustrine sediments deposited in proglacial lakes and eolian (wind-deposited) materials make up the remainder of the land surface. The percentage of the land covered by surficial deposits of each type is: glacial ice - 42%, till - 20%, bedrock - 18%, colluvium (scree) - 14%, and all others ($\leq$1% each). The area of salt-water and large lakes was not included in these calculations.

The climate of Cumberland Peninsula is fairly harsh and unpredictable (Yorke 1972, Masterton and Findlay 1976, Seidel 1987). It is typified by: (1) a high incidence of cyclone or low-pressure activity; (2) the highest rates of precipitation for the arctic islands; (3) the formation of new ice cover during most years; and (4) variable weather

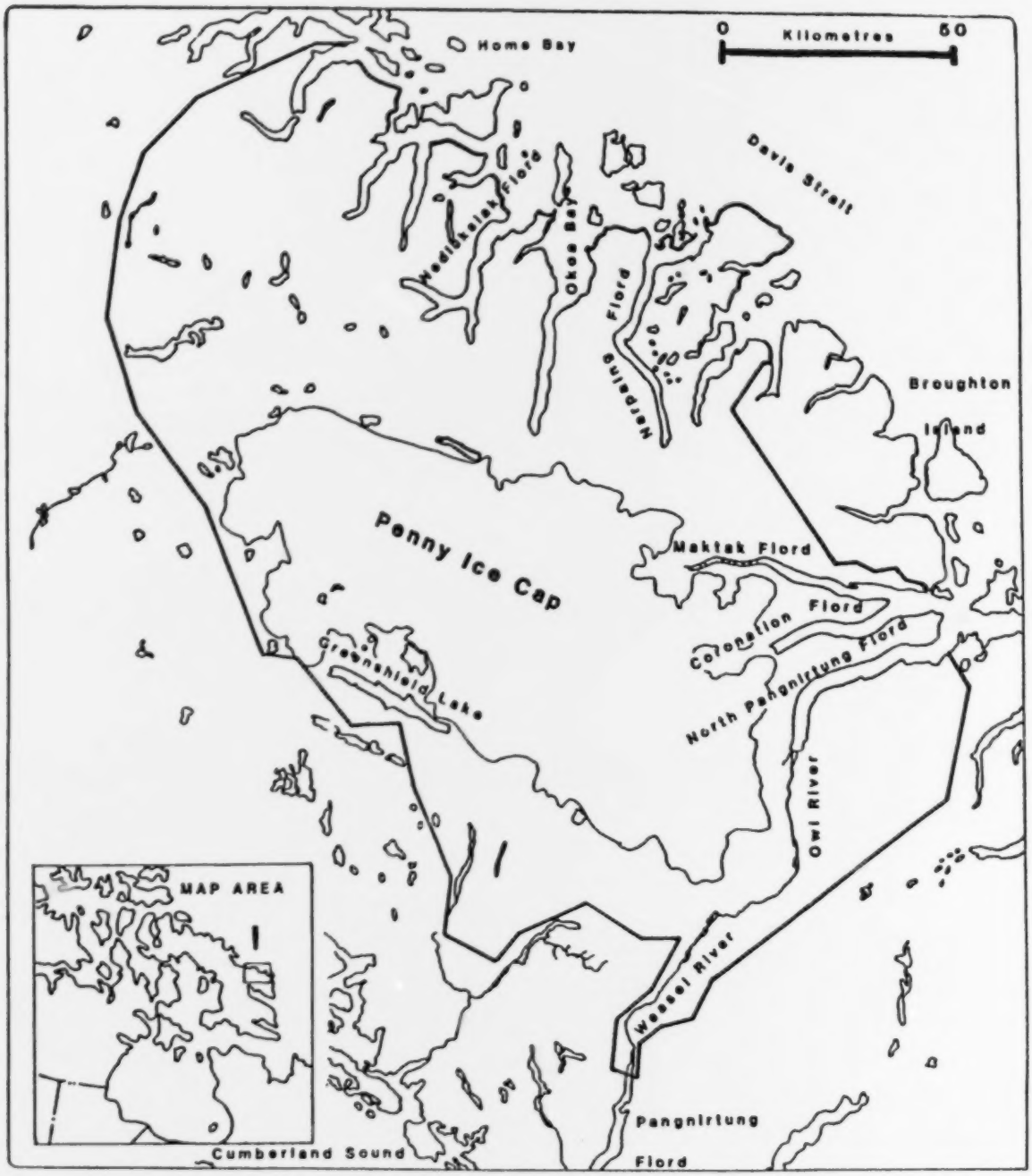


Figure 1. Auyuittuq National Park Reserve.

patterns. The weather is greatly influenced by the mountainous nature of the local terrain which scatters storm systems, causes cloud formation and precipitation, and channels and enhances existing winds. The existence of nearby ice fields causes temperature inversions and strengthens down-slope, valley, and fiord winds. The ocean acts as a "heat sink" and has a cooling effect on nearby areas in summer and a warming influence during winter. Formation of clouds and fog is frequent in coastal areas during summer.

Great variations in temperatures occur seasonally and locally. Seidel (1987) reviewed data for 5 weather stations in the vicinity of Auyuittuq and reported that the mean daily temperature for these stations averaged above freezing only during June (0.5° C), July (5.3°), and August (4.5°). The growing season, defined as the period between the last 5 consecutive days in spring with mean daily temperatures less than 5° and the first 5 such days in autumn (Masterton and Findlay 1976:13), averages only 20 days at Broughton Island (located 20 km from the park) and 46 days at Dewar Lakes (about 150 km northwest). Temperatures for the 5 weather stations averaged -21.6° C for November - April and were generally lowest in January, February, and March.

On average, 3/4 of the annual precipitation (about 30 cm) occurs as snow. Snow may fall during any month of the year with October and November being particularly high snow months. Peak rainfall occurs in July and August. Precipitation and other meteorological parameters vary greatly from place to place because of the diversity in topography, elevation, exposure, and proximity to modifying influences such as the Penny Ice Cap and the ocean.

The soils of the park are shallow, low in nutrients, and probably acidic. According to Tedrow's (1977:141) classification of arctic soils, Auyuittuq falls in the zone of subpolar desert soils. Based on descriptions of local soils by Bockheim (1975) and Terasmae (1975), we believe that at least 5 major soil types exist in the park: (1) polar desert soils characterized by gravelly pavement, high drainage, and sparse vegetation cover (mainly lichens); (2) arctic brown soils form on well-drained fluvium, till, and colluvium and are typically vegetated by shrubs and herbaceous plants; (3) tundra soils which are wet, poorly drained soils developing on permafrost and support sedges (Carex spp.), cotton-grasses (Eriophorum spp.), and other moisture-loving plants; (4) soils of hummocky ground are

better drained and more highly frost-churned than tundra soils; and (5) bog soils which develop in wet areas and are characterized by an accumulation of peat.

Vegetation is sparse or nearly non-existent at higher elevations and the development of continuous vegetation is restricted mainly to mesic or moist fine-textured deposits at lower elevations. We recognized 6 broad types of plant communities in the park: wet tundra, dwarf shrub-graminoid, dwarf shrub, high elevation barrens, early successional, and seashore (Hines and Moore 1988).

**Wet tundra** develops most frequently on poorly drained fine-textured deposits at low elevations. Small ponds, patterned ground, and tussock-tundra are typical features of this community. Grasses or grass-like plants, including Eriophorum angustifolium, Carex bigelowii, and Luzula confusa are among the dominant plants. Dwarf shrubs (Cassiope tetragona, Vaccinium uliginosum, Salix arctica and Salix herbacea) occur on drier tussocks and near small streams on scree slopes or moraines.

The **dwarf shrub-graminoid community** is widely distributed, being found most frequently on mesic till or colluvium at elevations below 400 m. The diverse flora is characterized by abundant grasses, sedges, forbs, and shrubs. Most frequent among the grasses and sedges are Poa arctica, Arctagrostis latifolia, Carex bigelowii, and Luzula confusa. Common forbs include Polygonum viviparum, Stellaria longipes, Papaver radicatum, Epilobium latifolium, and Pedicularis hirsuta. Salix arctica, Salix herbacea, Cassiope tetragona, Vaccinium uliginosum, and Dryas integrifolia are typical shrubs.

The **dwarf shrub community** has fairly abundant shrub and lichen cover and comparatively sparse herb and bryophyte cover. It occurs in similar types of environments as the dwarf shrub-graminoid community although usually on drier and coarser materials. The overall species composition of the community is similar to that of the dwarf shrub-graminoid community.

**High elevation barrens** are characterized by sparse cover and a low diversity of vascular plants. This community prevails at elevations above 600 m, under a wide range of moisture conditions and surficial deposits. The dominant vascular plants are Luzula confusa,

Cassiope tetragona, and Papaver radicatum. Lichens are abundant on all but the most recently glaciated surfaces.

**Early successional stages** support a sparse cover of herbaceous plants and little shrub, bryophyte, or lichen cover. They occur in newly created environments, which if left undisturbed, will eventually support dwarf shrub, dwarf shrub-graminoid, or wet tundra communities. We observed two main types of early successional environments in the park: (1) sands and gravels deposited near some of the major rivers and maintained in an unvegetated state by the formation of icings (aufeis); and (2) recently deposited till or colluvium. Most abundant vascular plants in early successional communities are Epilobium latifolium, Papaver radicatum, Luzula confusa, Poa arctica, and Saxifraga oppositifolia.

A sparse cover of salt-tolerant herbs characterizes **seashore communities**. The flora of this community was not intensively studied but the following species are known to occur: Puccinellia phryganodes, Puccinellia langeana, Carex maritima, Honckenya peploides, Cochlearia officinalis, Stellaria humifusa, and Elymus arenarius.

Further details of the study area and the local environment are described by Yorke (1972), Elliott (1973), Masterton and Findlay (1976), Wilson (1976), Dyke et al. (1982), Seidel (1987), Hines and Moore (1988), and the reports cited therein.

## METHODS

Field work was conducted from 17-19 July 1985, 10 July - 2 August 1986, and 18-24 July 1987. Surveys during the 1985 field season were conducted by Decker as part of the Northern Land Use Information Series - a cooperative venture involving the Lands Directorate of Environment Canada and the NWT Department of Renewable Resources. Studies in 1986-87 were carried out by Hines and Moore as part of the Basic Resource Inventory of Auyuittuq National Park Reserve. Field work involved general reconnaissance flights (primarily over vegetated parts of the park), lower level flights over suspected areas of wildlife use, and more intensive ground work. Fixed-wing aircraft flights (Cessna 337) were conducted over a 3-day period in 1985, and a Bell 206B helicopter was used for 10 days in 1986-87. Flight time totaled <10 hours in 1985, 8 hours in 1986, 26 hours in 1987, and <44 hours overall. Elevation of flights varied greatly depending on weather conditions, terrain, and type of aircraft, but generally averaged 100-200 m above the ground. Typical flight speeds were about 200 km/hr for the Cessna and about 100 km/hr for the helicopter. During flights, the locations and numbers of animals sighted were recorded directly on 1:250,000 topographic maps. In 1986, surveys of the most accessible part of the park, the Weasel River Valley, were conducted on foot over a 2-week period.

In 1986 and 1987, we recorded the vegetation and environmental characteristics at 100 sites in the park. The presence or absence of different species of wildlife (based on actual observation or inferred from tracks or droppings) was recorded. Vegetation data recorded at each site included: type of plant community, dominant species, plant species composition, and percent canopy coverages of lichens, bryophytes, shrubs, and herbaceous plants. Elevation (determined from 1:250,000 maps or the altimeter of the helicopter), type of surficial deposits (bedrock, colluvium, till, fluvium, eolian, marine, or lacustrine) after Paradis et al. (1986), and a subjective assessment of moisture conditions (dry, dry-mesic, mesic, mesic-wet, wet, very wet) were also recorded. Further details of the methods used during vegetation studies and the physical and biotic characteristics of the 100 sample sites are described by Hines and Moore (1988).

## RESULTS

Survey intensity was limited by time, the vastness of the area involved, and loss of fuel from some caches. Relative survey coverage was high in the Weasel River Valley, Owl River Valley, and Kivitoo area; moderate near Narpaing, Quajon, Maktak, and North Pangnirtung fiords, and the Kolik River - Greenshield Lake area; and low in all areas west of Okoa Bay in the northern part of the park, and west of Greenshield Lake in the south.

Evidence of one species of fish, 23 species of birds, and 9 species of mammals was recorded. Details of these observations are presented in the following species accounts. Characteristics of the habitat used by the most common species of wildlife are indicated in Appendices 1 to 6.

### Fish

**Arctic Charr (Salvelinus alpinus)**

Small arctic charr were seen in two river systems and three lakes (Table 1). Two of the lake populations appeared to be land-locked and the third may have been land-locked also, being separated from the ocean by a long system of rivers and lakes. The population found in an unnamed river in the southwestern part of the park may have been effectively isolated from the sea by rapids and falls. Seemingly, only charr found in the Owl River system had easy access to the ocean and likely comprised the only anadromous stock we observed.

### Birds

**Red-throated Loon (Gavia stellata)**

Twelve loons were observed during helicopter surveys including a group of 3, 3 pairs, and 3 lone birds. Only the group of 3 (sighted in Quajon Fiord) could be positively identified as red-throats. We believe, based on the size and form of the other birds, that they were also red-throated loons. Sightings were widely distributed throughout the park (Table 2).

Table 1. Sightings of arctic charr in Auyuittuq National Park Reserve, 1985-87.

| Date | General location | UTM grid[a] |
|---|---|---|
| 10 July 1986 | Small pond in the Owl River Valley | MK 27E 08N |
| 18 July 1987 | Large lake near headwaters of the Isurtuq River | EF 48E 15N |
| 21 July 1987 | Lake between Narpaing and Quajon fiords | ML 00E 12N |
| 22 July 1987 | Small stream feeding into the Owl River | MK 27E 13N |
| 23 July 1987 | Unnamed river in the southwestern part of park | FD 34E 94N |

[a] Universal Transverse Mercator grid.

Table 2. Sightings of red-throated loons in Auyuittuq National Park Reserve, 1985-87.

| Date | Number of birds | General location | UTM grid[a] |
|---|---|---|---|
| 18 July 1987 | 2 | Kivitoo Peninsula | ML 27E 40N |
| 21 July 1987 | 1 | Kivitoo Peninsula | LL 99E 29N |
| 21 July 1987 | 3 | Quajon Fiord | ML 13E 19N |
| 21 July 1987 | 1 | Maktak Fiord | MK 21E 73N |
| 23 July 1987 | 2 | Southwestern park | FE 26E 90N |
| 24 July 1987 | 2 | Southwestern park | FE 24E 91N |
| 24 July 1987 | 1 | Ranger River | EE 73E 52N |

[a] Universal Transverse Mercator grid.

**Common Loon (Gavia immer)**

One common loon was sighted in July 1986 near the north end of Pangnirtung Fiord (just south of the park boundary).

**Northern Fulmar (Fulmarus glacialis)**

Northern fulmars were occasionally found in Pangnirtung Fiord but none were seen in the park. Any fulmars venturing into park waters are likely from the Cape Searle or Reid Bay colonies located 60-80 km east of the park.

**Canada Goose (Branta canadensis)**

Canada geese appeared to be common nesters in or near areas of wet tundra, particularly in the Owl River Valley, near the head of Maktak Fiord, and in the southwestern part of the park (Figure 2, Table 3). During field work, we found 16 broods (i.e., adults plus young) and made 24 sightings of moulting or broodless Canada geese. Flocks of moulting or broodless geese numbered up to 50 birds and probably consisted of either non-breeders or unsuccessful nesters.

Actual observations of geese (both Canadas and snows) were restricted to wetland areas and adjacent tundra, but abundant goose droppings were noted in many upland sites that supported grasses or sedges (Appendix 1). New growth had been grazed at many such sites and, it is possible, as suggested by Elliott (1973), that some snow-free uplands are used by feeding geese in early spring.

**Snow Goose (Chen caerulescens)**

Snow geese were not as abundant as Canada geese in Auyuittuq. Eighteen observations, including 11 sightings of broods and 7 sightings of broodless or moulting snow geese, were made in or near the park (Table 4). Snow geese used many of the same wetland complexes as Canada geese (an exception being the wetlands at the head of Maktak Fiord where only Canada geese were found). All adult snow geese seen in the park belonged to the white color phase.

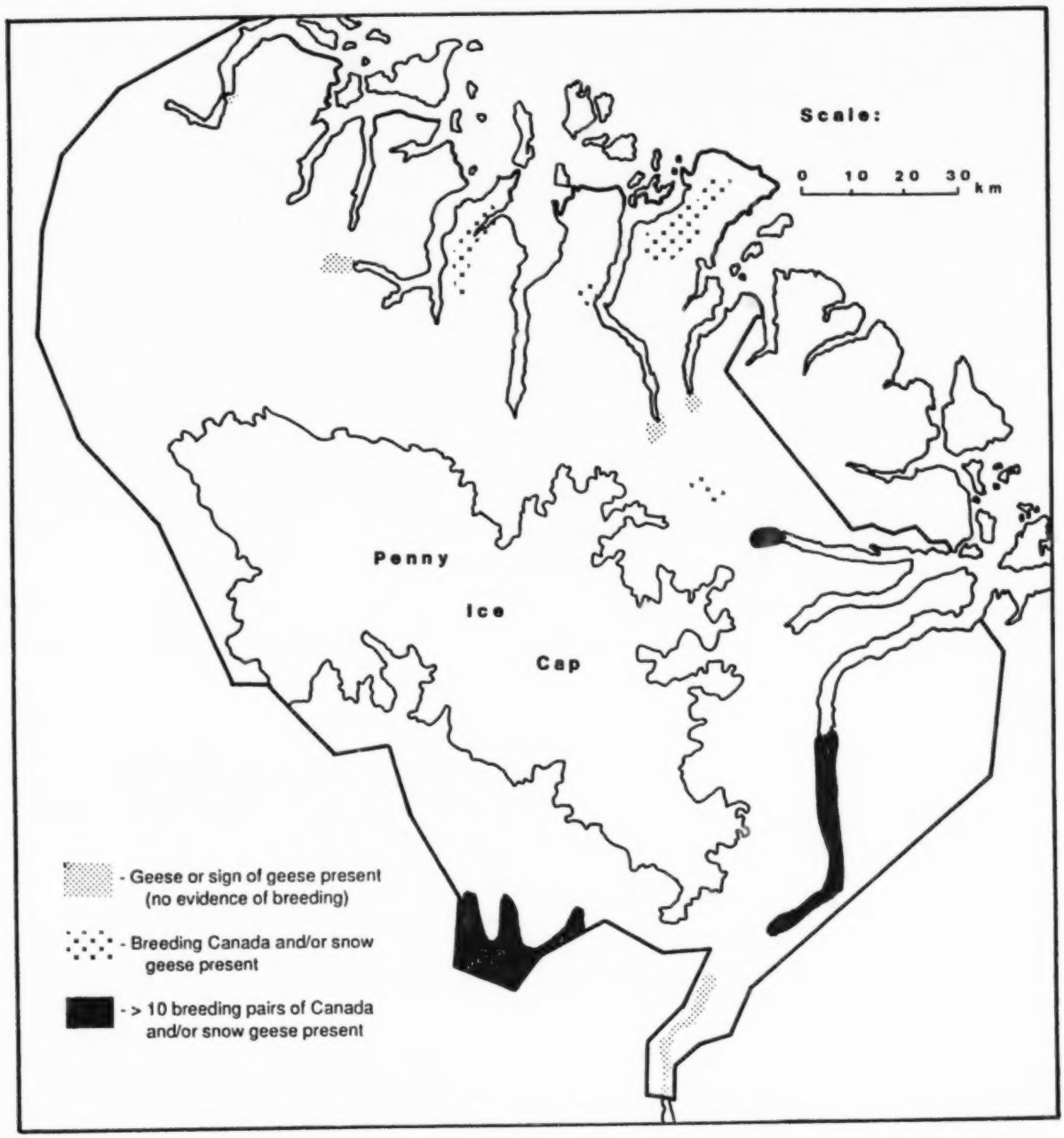
Scale:
0 10 20 30 km
Penny
Ice
Cap
- Geese or sign of geese present (no evidence of breeding)
- Breeding Canada and/or snow geese present
- > 10 breeding pairs of Canada and/or snow geese present

Figure 2. Locations where Canada geese and snow geese were sighted in or near Auyuittuq National Park Reserve, 1985-87.

Table 3. Sightings of Canada geese in or near Auyuittuq National Park Reserve, 1985-87.

| Number of birds | Date | General location | UTM grid[a] |
|---|---|---|---|
| 2 adults + young | 18 July 1985 | Owl River Valley | MK 26E 22N |
| 2 adults + young | 18 July 1985 | Owl River Valley | MK 26E 25N |
| 2 adults + young | 18 July 1985 | Owl River Valley | MK 26E 25N |
| 2 adults + young | 18 July 1985 | Owl River Valley | MK 26E 25N |
| 2 adults + young | 18 July 1985 | Owl River Valley | MK 24E 19N |
| 7 adults | 19 July 1985 | Southwestern park | FD 26E 96N |
| 20 adults | 19 July 1985 | Southwestern park | FD 26E 96N |
| 2 adults + young | 19 July 1985 | Southwestern park | LJ 71E 98N |
| 2 adults + young | 19 July 1985 | Southwestern park | LJ 71E 98N |
| 2 adults + young | 19 July 1985 | Southwestern park | LJ 71E 98N |
| 2 adults + young | 19 July 1985 | Southwestern park | LJ 74E 95N |
| 2 adults + young | 19 July 1985 | Southwestern park | LJ 74E 95N |
| 40-50 adults | 12 July 1986 | Owl River Valley | MK 27E 08N |
| 6 adults | 17 July 1987 | Kivitoo Peninsula | ML 04E 32N |
| 8 adults | 17 July 1987 | Owl River Valley | MK 27E 13N |
| 15 adults | 17 July 1987 | Owl River Valley | MK 26E 15N |
| 2 adults + 4 young | 17 July 1987 | Owl River Valley | MK 28E 32N |
| 2 adults | 18 July 1987 | Nedluksiak Fiord | FF 22E 39N |
| 25 adults | 21 July 1987 | Owl River Valley | MK 25E 16N |
| 1 adult | 21 July 1987 | Narpaing Fiord | LK 99E 97N |
| 2 adults | 21 July 1987 | Kivitoo Peninsula | ML 05E 33N |
| 2 adults + young | 21 July 1987 | Narpaing-Maktak Fiord | MK 11E 84N |
| 1 adult | 21 July 1987 | Maktak Fiord | MK 17E 73N |

(continued)

Table 3. Sightings of Canada geese ..... (continued)

| Number of birds | Date | General location | UTM grid[a] |
|---|---|---|---|
| 2 adults + young | 21 July 1987 | Maktak Fiord | MK 18E 73N |
| 2 adults + young | 21 July 1987 | Maktak Fiord | MK 18E 73N |
| 2 adults + young | 21 July 1987 | Maktak Fiord | MK 18E 73N |
| 17 adults | 21 July 1987 | Maktak Fiord | MK 19E 73N |
| 2 adults + 4 young | 21 July 1987 | Maktak Fiord | MK 19E 72N |
| 28 adults | 21 July 1987 | Owl River Valley | MK 25E 27N |
| 24 adults | 21 July 1987 | Owl River Valley | MK 25E 25N |
| 2 adults | 22 July 1987 | Owl River Valley | MK 25E 06N |
| 40 adults | 22 July 1987 | Owl River Valley | MK 25E 05N |
| 1 adult | 23 July 1987 | Southwestern park | EE 25E 02N |
| 20 adults | 23 July 1987 | Southwestern park | FD 27E 91N |
| 10 adults | 23 July 1987 | Southwestern park | FD 20E 93N |
| 2 adults | 23 July 1987 | Southwestern park | FD 34E 93N |
| 25 adults | 23 July 1987 | Southwestern park | FD 34E 93N |
| 5 adults | 23 July 1987 | Southwestern park | LJ 72E 96N |
| 18 adults | 23 July 1987 | Southwestern park | LJ 71E 93N |
| 11 adults | 24 July 1987 | Southwestern park | FD 21E 93N |

[a] Universal Transverse Mercator grid.

Table 4. Sightings of snow geese in or near Auyuittuq National Park Reserve, 1985-87.

| Number of birds | Date | General location | UTM grid[a] |
|---|---|---|---|
| 20 adults | 19 July 1985 | Southwestern Park | LJ 71E 94N |
| 1 adult[b] | 12 July 1986 | Owl River Valley | MK 27E 08N |
| 2 adults + 3 young | 17 July 1987 | Owl River Valley | MK 18E 01N |
| 2 adults | 17 July 1987 | Owl River Valley | MK 26E 08N |
| 2 adults | 17 July 1987 | Owl River Valley | MK 25E 09N |
| 2 adults + young | 17 July 1987 | Narpaing Fiord | LL 89E 23N |
| 2 adults | 18 July 1987 | Nedluksiak Fiord | FF 19E 38N |
| 2 adults + young | 18 July 1987 | Nedluksiak Fiord | FF 17E 34N |
| 1 adult | 18 July 1987 | Nedluksiak Fiord | FF 17E 26N |
| 2 adults + 2 young | 21 July 1987 | Kivitoo Peninsula | ML 09E 40N |
| 2 adults + 3 young | 21 July 1987 | Owl River Valley | MK 25E 15N |
| 2 adults + 4 young | 21 July 1987 | Owl River Valley | MK 25E 14N |
| 2 adults + young | 22 July 1987 | Owl River Valley | MK 24E 04N |
| 2 adults + young | 22 July 1987 | Owl River Valley | MK 24E 04N |
| 2 adults + young | 23 July 1987 | Southwestern park | FE 25E 01N |
| 4 adults | 23 July 1987 | Southwestern park | FD 27E 91N |
| 2 adults + 1 young | 23 July 1987 | Southwestern park | FD 24E 91N |
| 4 adults + 2 young | 24 July 1987 | Southwestern park | FD 23E 92N |

[a] Universal Transverse Mercator grid.

[b] With a flock of 40-50 Canada geese.

**Common Eider (Somateria mollissima)**

**King Eider (Somateria spectabilis)**

Eiders were seen on 13 occasions (Table 5). Species could not usually be determined from the air, but 3 small flocks consisted of common eiders and 3 larger groupings appeared to be king eiders. Two areas frequently used by eiders were the waters near Kivitoo Peninsula and the head of Pangnirtung Fiord.

The eiders found in our surveys were mainly males and probably non-breeders, although the possibility exists that a few king eiders nest near fresh-water ponds in the park. D. Kooneeliusie (Park Warden) indicated that common eiders nest on some of the offshore islands near the north side of the park but the actual abundance and distribution of nesting eiders on these islands is unknown.

**Red-breasted Merganser (Mergus serrator)**

A lone male sighted near Quajon Fiord in 1987 is, to our knowledge, only the second record of this species for the park. Previously, Watson (1957a) observed a female merganser in the Owl River Valley.

**Gyrfalcon (Falco rusticolus)**

In July 1985, a gyrfalcon nest-site was discovered just outside the park in a valley south of the Penny Ice Cap (66°45'N, 66°15' W). A lone adult was spotted <150 m from the nest. In July 1987, we checked the only known gyrfalcon eyrie in the park at Okoa Bay. Two adults and 3 nestlings were present.

**Peregrine Falcon (Falco peregrinus)**

One adult was seen near Windy Lake (Pangnirtung Pass) in August 1986.

**Rock Ptarmigan (Lagopus mutus)**

The rock ptarmigan, although it must occur at low population densities, is one of the typical birds of the park. In 1986 and 1987, broods of ptarmigan were occasionally sighted by hikers in the Weasel River Valley (although we saw none in 2 weeks of intensive field work there). Ptarmigan droppings were recorded at 32 of 100 sites where we intensively sampled vegetation. Such sites were characterized by till or colluvial deposits, and abundant

Table 5. Sightings of common and king eiders in Auyuittuq National Park Reserve, 1985-87.

| Species | Number of birds | Date | General location | UTM grid[a] |
|---|---|---|---|---|
| King | 200 | 17 July 1985 | Kivitoo Peninsula | ML 08E 41N |
| King | several hundred | 17 July 1985 | Kivitoo Peninsula | ML 08E 44N |
| King | 50 | 19 July 1985 | Pangnirtung Fiord | LJ 88E 61N |
| Undetermined | 50 | 14 July 1986 | Pangnirtung Fiord | LJ 88E 65N |
| Undetermined | 50 | 17 July 1986 | Pangnirtung Pass[b] | LJ 98E 85N |
| Undetermined | 200-300 | 17 July 1986 | Pangnirtung Pass[b] | LJ 98E 85N |
| Undetermined | 1 | 18 July 1987 | Nedluksiak Fiord | FF 05E 27N |
| Common | 20 | 18 July 1987 | Okoa Bay | LL 75E 23N |
| Undetermined | 100 | 18 July 1987 | Kivitoo Peninsula | ML 28E 40N |
| Undetermined | 1 | 19 July 1987 | Northwestern park | EF 82E 43N |
| Common | 6 | 21 July 1987 | Kivitoo Peninsula | ML 08E 18N |
| Common | 6 | 21 July 1987 | Kivitoo Peninsula | ML 11E 23N |
| Undetermined | 1 | 22 July 1987 | Owl River | MK 27E 11N |

[a] Universal Transverse Mercator grid.

[b] In flight through Pangnirtung Pass.

dwarf shrub or dwarf shrub-graminoid vegetation (Appendix 2). Dwarf willows (primarily Salix arctica) were found at 28 (88%) of the sites.

**Baird's Sandpiper (Calidris bairdii)**

A lone Baird's sandpiper was spotted near the edge of the Owl River in July 1987. Watson (1957a) reported that this species occurred in the valley in small numbers in 1953.

**Glaucous Gull (Larus hyperboreus)**

Glaucous gulls were commonly sighted in most fiords and seen occasionally in Pangnirtung Pass. In 1985, 4 small breeding colonies numbering 5-15 pairs of gulls were found in North Pangnirtung Fiord. Another large colony of 75-125 pairs exists just outside the park near the mouth of Maktak Fiord (Figure 3).

**Dovekie (Alle alle)**

In April 1987, a dead dovekie was found near Summit Lake, Pangnirtung Pass, by Tom Elliott (Chief Park Warden). To our knowledge, it is the only record of the dovekie for the park.

**Snowy Owl (Nyctea scandiaca)**

In July 1987, only one snowy owl was sighted in the Owl River Valley, despite relatively extensive helicopter surveys there. In 1953, Watson (1957b) recorded 11 pairs and 8 nests in the valley. Although our surveys were far less thorough than those of Watson, we suspect that the differences in numbers reflect mainly changes in population size.

Changes in owl numbers may reflect normal short-term fluctuations in abundance or a long-term population decline. D. Kooneeliusie (personal communication) suggested that owls have not been numerous in the valley for a number of years, supporting the contention that the decline is long-term. Conversely, the major prey species of snowy owls (lemmings) were exceedingly abundant during Watson's study and the owls may have been unusually abundant also. Thus, the densities of owls reported by Watson might be a rare event and perhaps only a few pairs of owls should be expected under normal conditions. In any event, the status of snowy owls and their prey in the valley needs to be better documented.

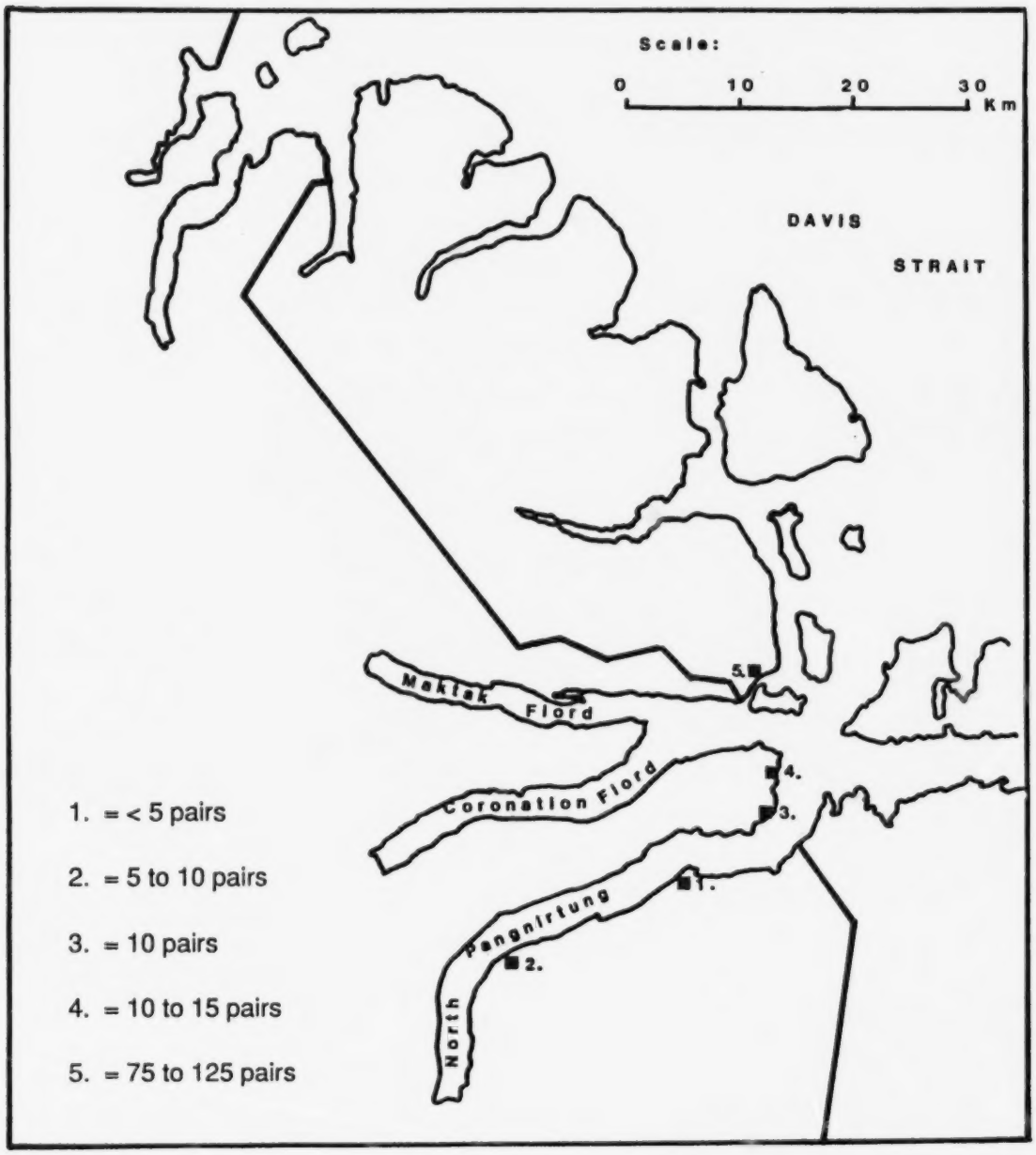


Figure 3. Locations of glaucous gull colonies found in or near Auyuittuq National Park Reserve.

In addition to our observation in the Owl Valley, a pair of snowy owls was sighted on consecutive days (23 and 24 July 1987) in a lushly vegetated valley south of the Penny Ice Cap (66°45'N, 66°15'W). The birds flushed from the same area on both days, and possibly had a nest nearby.

**Horned Lark (Eremophila alpestris)**

Horned larks were found infrequently in sparse dwarf shrub cover and other dry, poorly vegetated sites. We saw no evidence of breeding, but Watson (1957a) reported several nests and broods for the Owl River Valley.

**Common Raven (Corvus corax)**

This species was sighted occasionally in the Weasel and Owl River Valleys but there was no evidence of breeding.

**Northern Wheatear (Oenanthe oenanthe)**

No wheatears were seen in the park although we did find a nest of this species near Pangnirtung. Elliott (1973) reported that wheatears were common at the head of Maktak Fiord, and both he and Watson (1957a) observed this species in Pangnirtung Pass.

**Water Pipit (Anthus spinoletta)**

The water pipit was a common breeder in Pangnirtung Pass and the southwestern part of the park. It frequented mesic dwarf shrub and dwarf shrub-graminoid communities with good ground cover and abundant mosquito populations.

**Common Redpoll (Carduelis flammea)**
**Hoary Redpoll (Carduelis hornemanni)**

Redpolls (not identified to species) were infrequent breeders in Pangnirtung Pass and the southwestern part of the park where they inhabited rocky slopes with significant amounts of shrub cover. Watson (1957a) found that hoary redpolls were the most abundant of the 2 redpoll species on Cumberland Peninsula.

**Lapland Longspur (Calcarius lapponicus)**

Longspurs were common breeders in mesic or moist dwarf shrub and dwarf

shrub-graminoid communities with good canopy cover. We observed them in Pangnirtung Pass and the southwestern part of the park.

**Snow Bunting (Plectrophenax nivalis)**

The snow bunting was widely distributed throughout the park in a broad range of habitats from sea level to high elevation (Appendix 3). We found 2 snow bunting nests and saw several fledged broods. We agree with Watson (1957a) that the snow bunting is by far the most abundant breeding bird in the park and surrounding area.

## Mammals

**Brown Lemming (Lemmus sibiricus)**

**Collared Lemming (Dicrostonyx torquatus)**

We observed only one lemming on Cumberland Peninsula in 1986 and 1987. It was seen near Pangnirtung (outside the park). Lemming burrows or droppings were found at 16 of 100 sites where we sampled vegetation, mostly in areas of wet tundra or dwarf shrub-grass vegetation (Appendix 4). Such habitats are typically used by Lemmus, which is, according to Watson (1956), the most abundant lemming on Cumberland Peninsula. Sign found in drier areas of dwarf shrub cover and high elevation barrens may have been from collared lemmings.

In 1986-87, lemming densities were very low and the distribution of these species was patchy (probably due to the lack of extensive areas of lowland tundra). The scarcity of animals, burrows, droppings, and feeding sites suggests that lemmings have not been abundant in recent years. This contrasts with the observations of Watson (1956) who witnessed an irruption of the brown lemming population in the Owl Valley in 1953. Watson estimated that late summer densities exceeded 300 lemmings/ha in one area of concentration. He reported that the vegetation on much of the valley bottom was greatly modified by the feeding and burrowing activities of the rodents.

**Arctic Hare (Lepus arcticus)**

The arctic hare was the most frequently seen and widely distributed mammal in the

park occurring at 51 of 100 sample sites. It was especially common in more heavily vegetated parts of the Owl and Weasel river valleys. Hares used a wide variety of habitats, possibly showing a slight preference for dwarf shrub communities (Appendix 5).

**Ringed Seal (Pusa hispida)**

Ringed seals were frequently sighted in the Kivitoo - Quajon Fiord area and were also found in Pangnirtung, North Pangnirtung, and Narpaing fiords. They are likely present at one time or another in most or all fiords in the park.

**Harp Seal (Phoca groenlandica)**

Two groups of harp seals, numbering 6 and 10 animals, were sighted outside the park in July 1987. Both sightings occurred in a lead system running parallel to the shore between Broughton Island and Kivitoo. The observations were about 15 km east of park boundaries at 67°52' N, 64°40' W.

**Polar Bear (Ursus maritimus)**

No sightings of bears or tracks were made during the surveys. One large fecal dropping, comprised largely of grasses or sedges, was noticed near the head of Maktak Fiord. Such droppings are apparently evacuated by female polar bears upon emerging from maternity dens in spring (Kooneeliusie, personal communication).

**Arctic Fox (Alopex lagopus)**

**Red Fox (Vulpes vulpes)**

We saw no foxes during field work but tracks or scats of foxes were found at 10 of 100 sites where vegetation was sampled. We suspect that most sign was from arctic foxes, the most commonly observed species on Cumberland Peninsula (Aningmiuq 1983). Our limited data suggest that foxes are widely distributed in the park at low densities.

**Barren-ground Caribou (Rangifer tarandus groenlandicus)**

We saw caribou only twice during surveys and found recent tracks at 11 other locations. In addition, a group of 4 caribou was reported by consultants working on the biophysical mapping of the park in 1985 (Paradis et al. 1986:39). This paucity of observations supports the view expressed by Elliott (1973), Elliott and Elliott (1974),

Drolet (1978), and others, that caribou exist at very low population densities in the park and vicinity.

The locations where we found caribou or their tracks are indicated in Figure 4. Two areas of relatively high use were: (1) the area southwest of the Penny Ice Cap near Greenshield Lake and the headwaters of the Ranger River; and (2) the area that includes the headwaters of the Isurtuq River and the valley leading to the western arm of Nedluksiak Fiord.

A calving ground may exist near the large lake at the headwaters of the Isurtuq River (Elliott and Elliott 1974). Although our surveys were conducted too late in the summer to identify calving areas and limited fuel supplies restricted our survey time in this area, we did find the tracks of a female and a very small calf near the north shore of the lake. The existence of a calving ground in this area warrants further investigation.

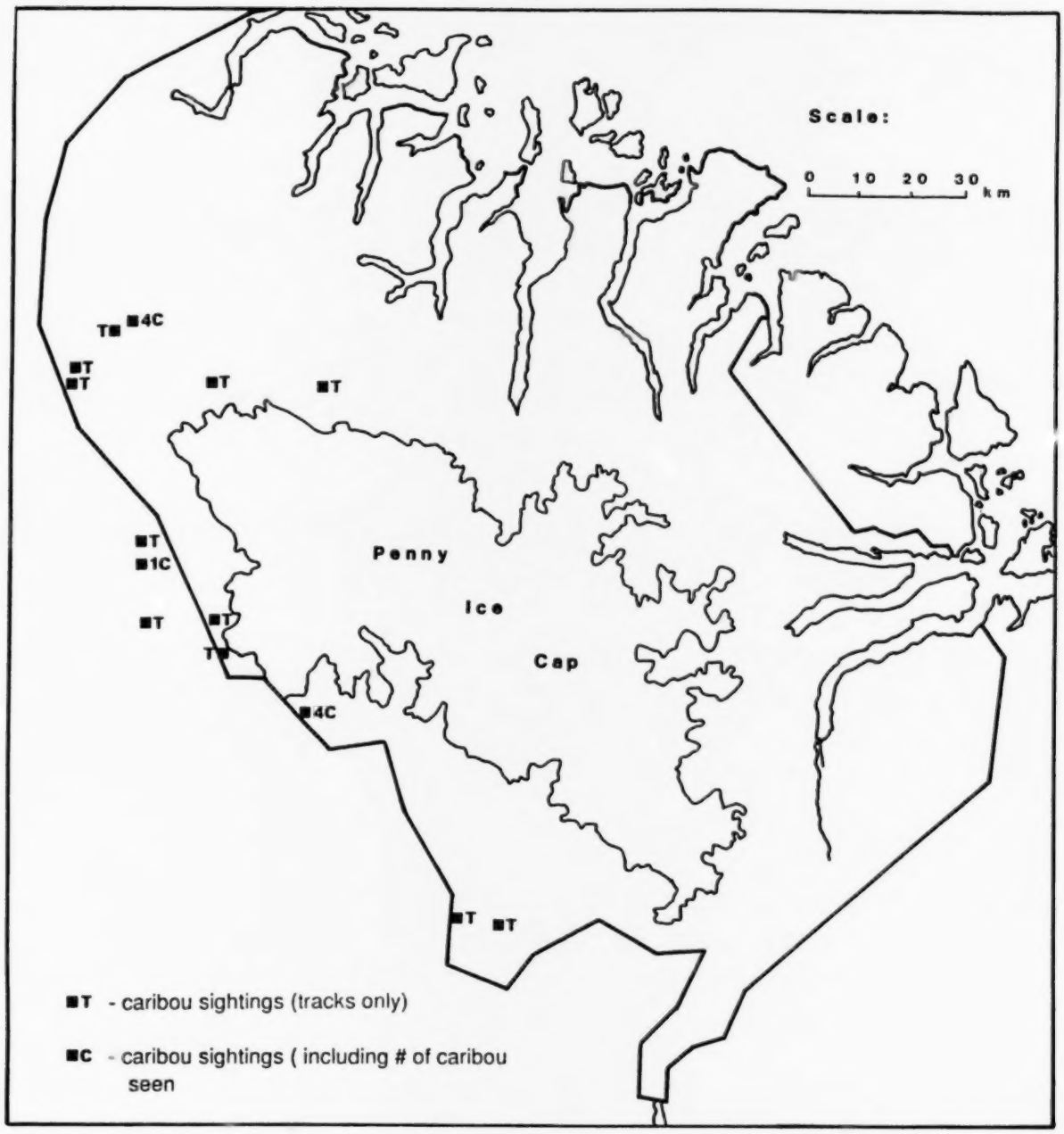


Figure 4. Locations where barren-ground caribou or their tracks were sighted in or near Auyuittuq National Park Reserve, 1985-87.

## DISCUSSION

The population densities and diversity of vertebrates in Auyuittuq National Park Reserve are low and only a few species such as snow buntings and arctic hares are common over a broad area. A few other species (e.g., Canada geese, snow geese) are locally abundant but their overall numbers and distribution are likely limited by the lack of suitable habitat. Although we did not collect information on absolute densities of wildlife, we suspect that previous estimates of population densities for snowy owls, songbirds, and small mammals (Watson 1956, 1957a&b, 1962, 1963) represent maximum densities as they were recorded in rather small areas of good habitat. Our observations suggest that densities in most areas are far lower than those reported by Watson.

Most species of terrestrial wildlife in the park seem to be dependent on the rather limited area of continuous vegetation and observations of wildlife and wildlife sign occurred primarily in wet tundra, dwarf shrub-graminoid, and dwarf shrub plant communities. Thus, much of the suitable wildlife habitat is restricted to valley bottoms and lower slopes <500 m above sea level. The protection of such areas, which cover only 15% of the park, should be an important consideration in park planning.

Based on the results of our surveys and those of previous studies, at least 4 major areas of significance to wildlife were apparent: (1) the southwestern part of the park; (2) the Owl River Valley; (3) Nedluksiak Fiord - Isurtuq River; and (4) the Kivitoo Peninsula and nearby fiords and bays. The boundaries of these areas are indicated in Figure 5, and the species of wildlife that are common in each area are presented in Table 6.

The southwestern part of the park supports the greatest diversity of birds and mammals of any area we visited and is especially important for waterfowl (Canada and snow geese), raptors (snowy owls and gyrfalcons), and songbirds. It is occasionally used by caribou, and undoubtedly would receive greater use if caribou populations on the Cumberland Peninsula were nearer their historical levels (Soper 1928, Elliott 1973).

The Owl River Valley provides good habitat for songbirds, arctic hare, ptarmigan, small mammals, and geese. Snowy owls probably still nest in this area although possibly in

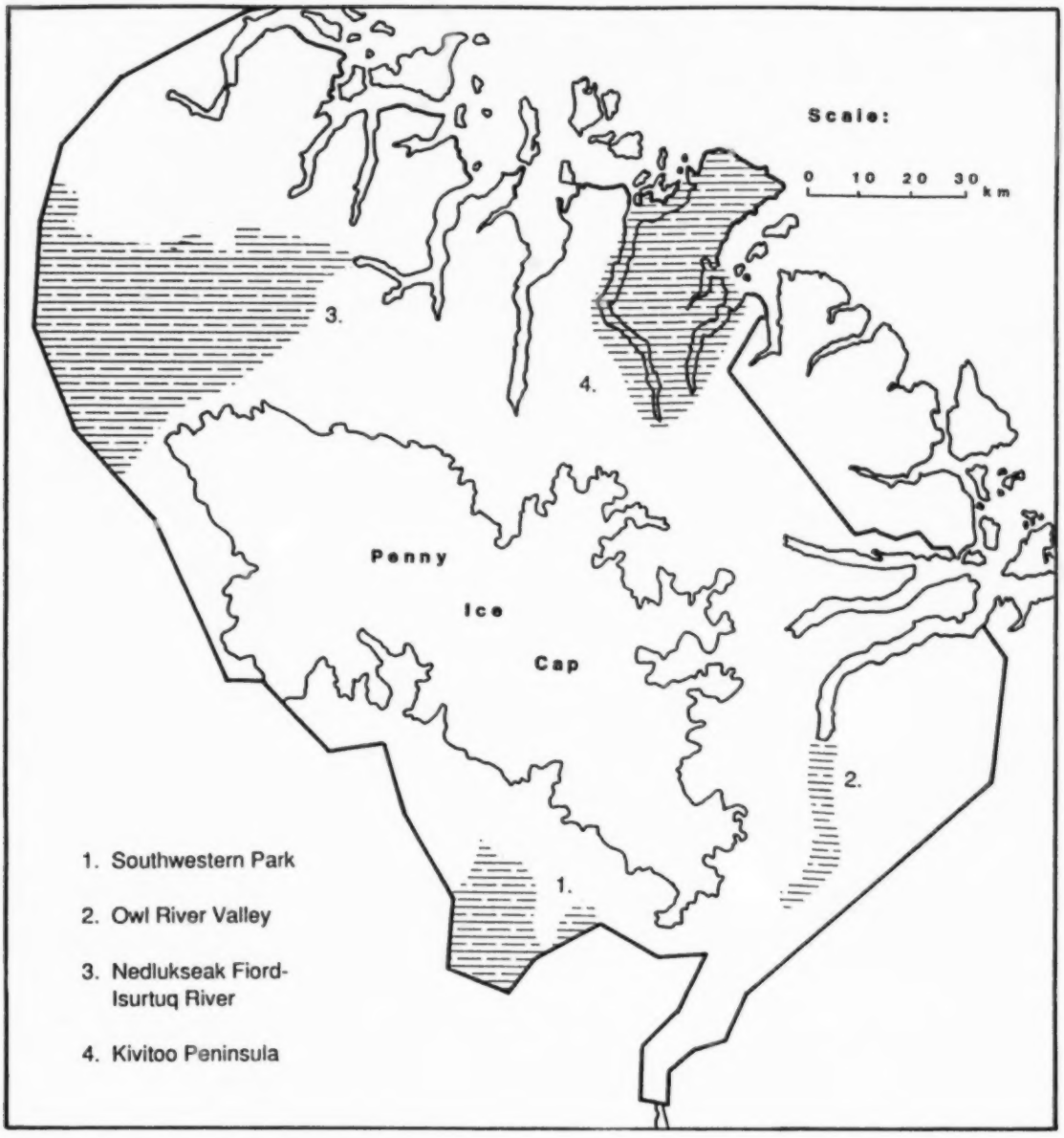


Figure 5. Four areas of importance to wildlife in Auyuittuq National Park Reserve: (1) Southwestern Park, (2) Owl River Valley, (3) Nedlukseak Fiord-Isurtuq River, and (4) Kivitoo Peninsula.

Table 6. The importance of 4 areas in Auyuittuq National Park Reserve as habitat for different species of wildlife.[a]

| Species | Southwestern Park | Owl River Valley | Nedluksiak Fiord - Isurtuq River | Kivitoo Peninsula |
|---|---|---|---|---|
| Red-throated loon | xx[a] | - | - | xx |
| Canada or snow goose | xx | xx | x | x |
| Common or king eider | - | - | x | xx |
| Rock ptarmigan | x | xx | x | x |
| Gyrfalcon or peregrine | x | - | x | - |
| Snowy owl | x | x | - | - |
| Songbirds | xx | xx | x | x |
| Brown or collared lemming | x | xx | x | x |
| Arctic hare | x | xx | x | x |
| Barren-ground caribou | x | - | x | - |
| Marine mammals[b] | - | - | x | xx |

[a] Rankings: xx = species common, x = species present, - = species not present or status unknown.

[b] Mainly ringed seals and polar bears.

lower abundance than formerly.

The status of most species of wildlife occurring between the head of Nedlukseak Fiord and the headwaters of the Isurtuq River is not well understood. This area has sparser vegetation than either the Owl River Valley or the southwestern part of the park and consequently most songbirds and small mammals are probably not abundant. The most important caribou range in the park and the only known nest-site of the peregrine falcon occurs here. Geese use the lowlands at the head of Nedluksiak Fiord but the breeding status of these birds is unknown.

The Kivitoo Peninsula supports low densities of breeding Canada and snow geese and is used by flocks of non-breeding common and king eiders. Ringed seals are frequently sighted in the fiords and bays, and a few polar bears occur on the peninsula and adjacent coastline when Davis Strait is ice-free. The use of this area by other species of wildlife is poorly understood.

## Information Requirements

The information presented in this and previous reports will not be adequate for the active management of any species of wildlife in the park. A better understanding of almost all aspects of the wildlife resources of Auyuittuq is needed for this purpose. Given the low densities of animals, and the large size, ruggedness, and inaccessibility of the park, such information will not come easily or cheaply. We recommend the following strategy for economical and efficient data collection.

(1) Reconnaissance level surveys of the northwestern and other inaccessible parts of the park are needed. Such work should emphasize helicopter surveys for caribou, raptors, waterfowl, and marine mammals, and ground work for smaller birds and mammals.

(2) Park staff should participate in collecting, recording, and summarizing data both as part of their regular duties in the park and during special surveys. Previous data have been recorded inconsistently, sometimes inaccurately, and in an unsystematic manner. Many opportunities to record potentially useful data have been missed.

(3) Special surveys to determine the status of economically important species (e.g., caribou) or species that are sensitive to disturbance (raptors) should be undertaken.

## ACKNOWLEDGMENTS

We thank Jim Ellesworth, Tom Elliott, and Ray Breneman (Parks Canada, Pangnirtung) for their help and hospitality when we were on Baffin Island, and Davidee Kooneeliusie (Park Warden, Broughton Island) for assisting in the field and sharing his knowledge of the park and its wildlife with us. Andy Theriault (Indian and Northern Affairs Canada, Iqaluit) allowed us to use the INAC helicopter in 1986 and 1987, and pilots Vic Cobb (Kenn Borek Air) and Glen Fawkes (Associated Helicopters) helped make our field work safe and efficient. Joanne Bird, Mike Fournier, and Leslie Wakelyn provided helpful comments on the manuscript and Laura Wilkinson edited the text and produced the figures. This investigation was supported by the Canadian Parks Service (Environment Canada) and the NWT Department of Renewable Resources.

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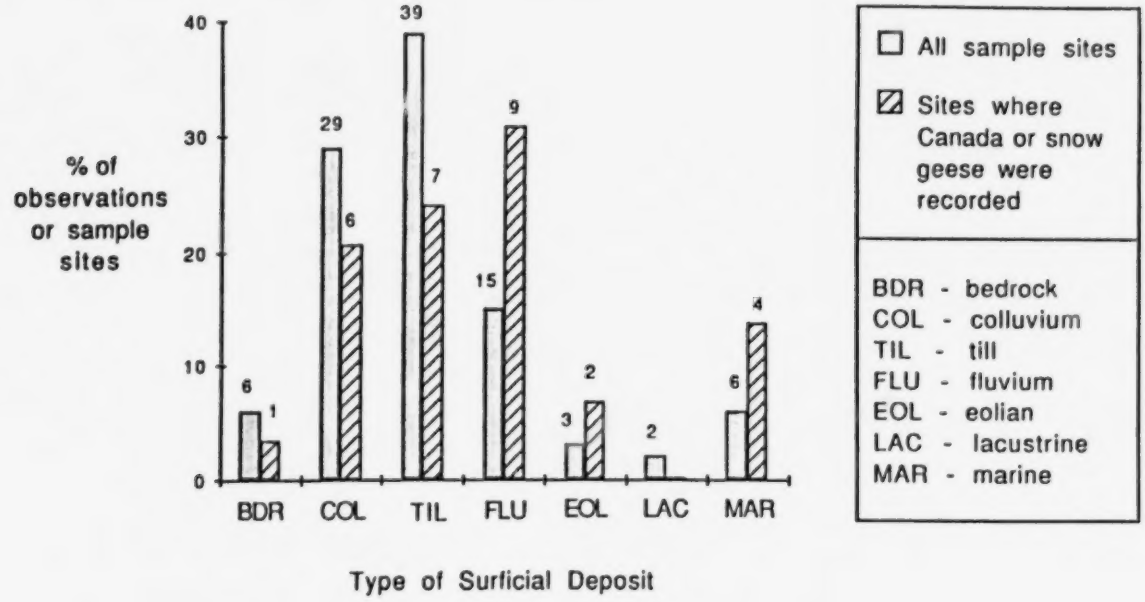
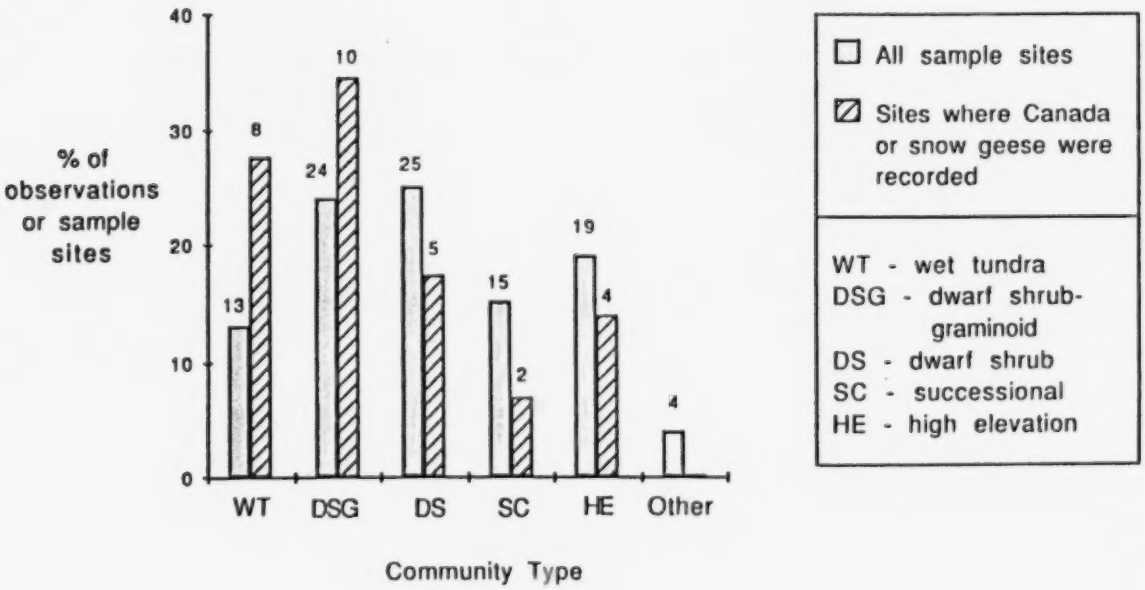
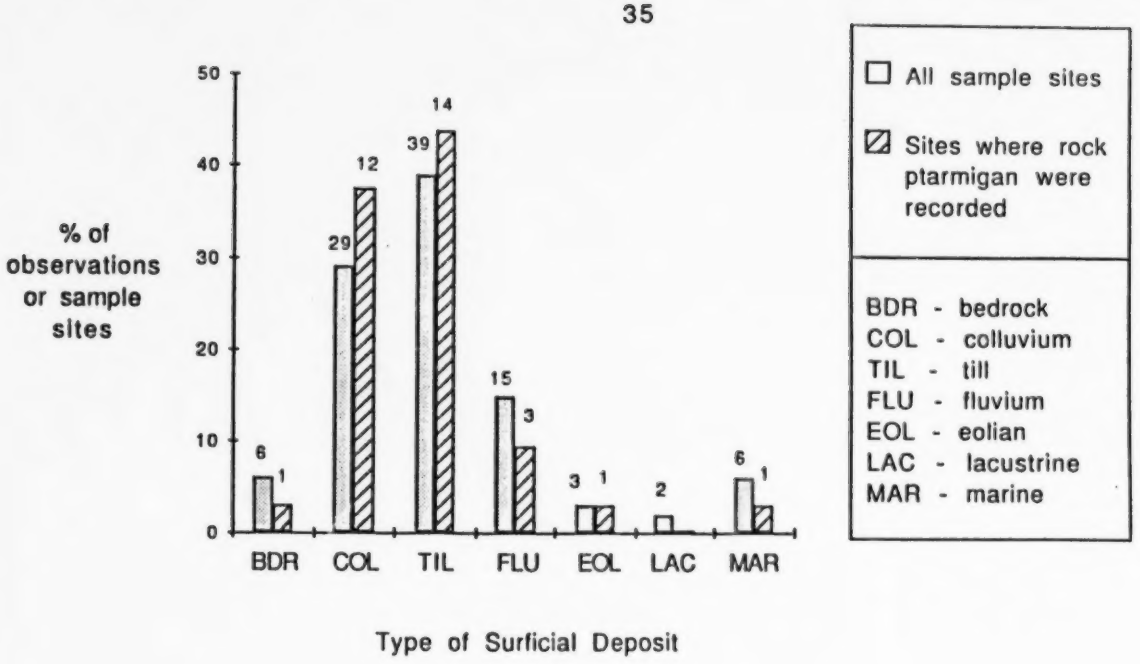
## PERSONAL COMMUNICATION

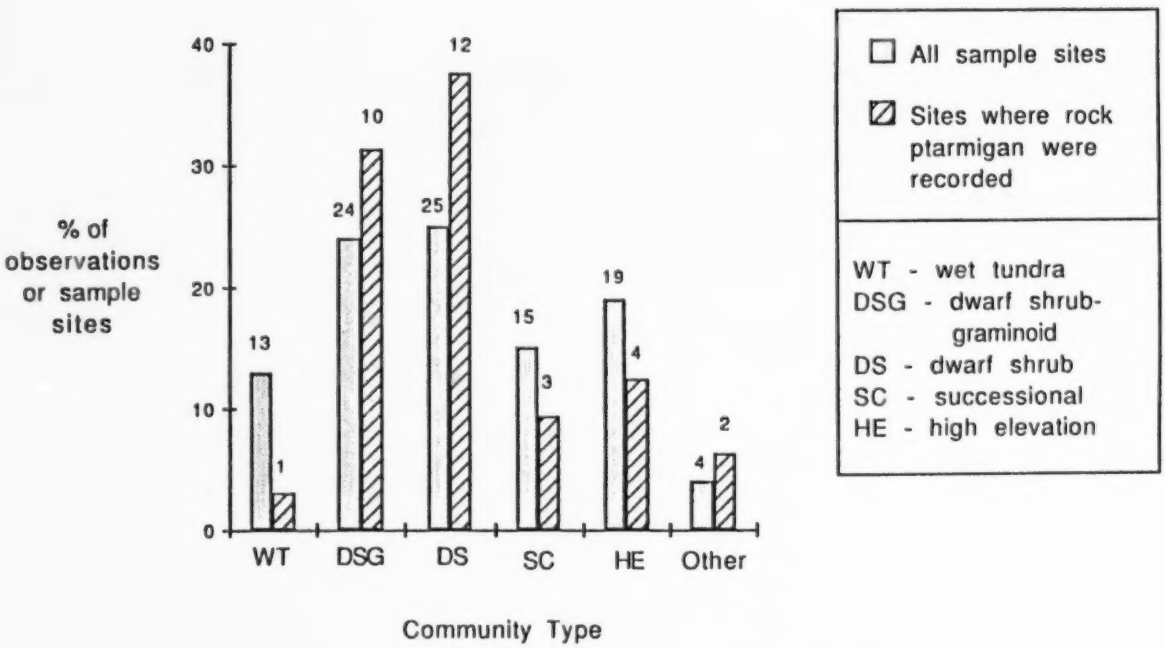
Davidee Kooneeliusie, Park Warden, Auyuittuq National Park Reserve, Broughton Island, NWT.



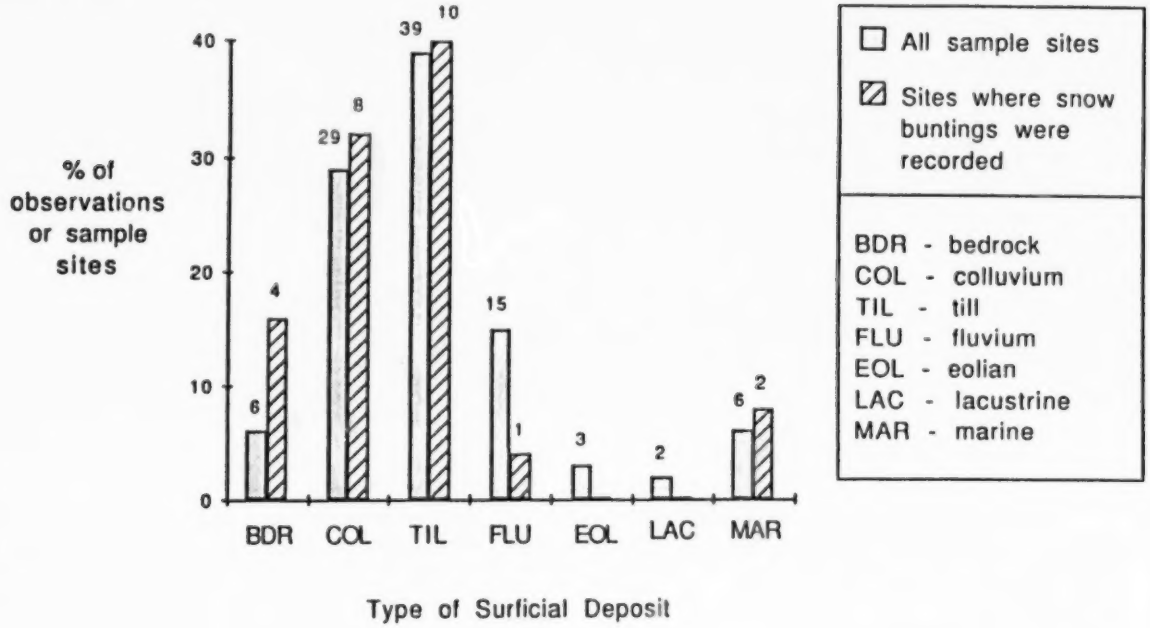



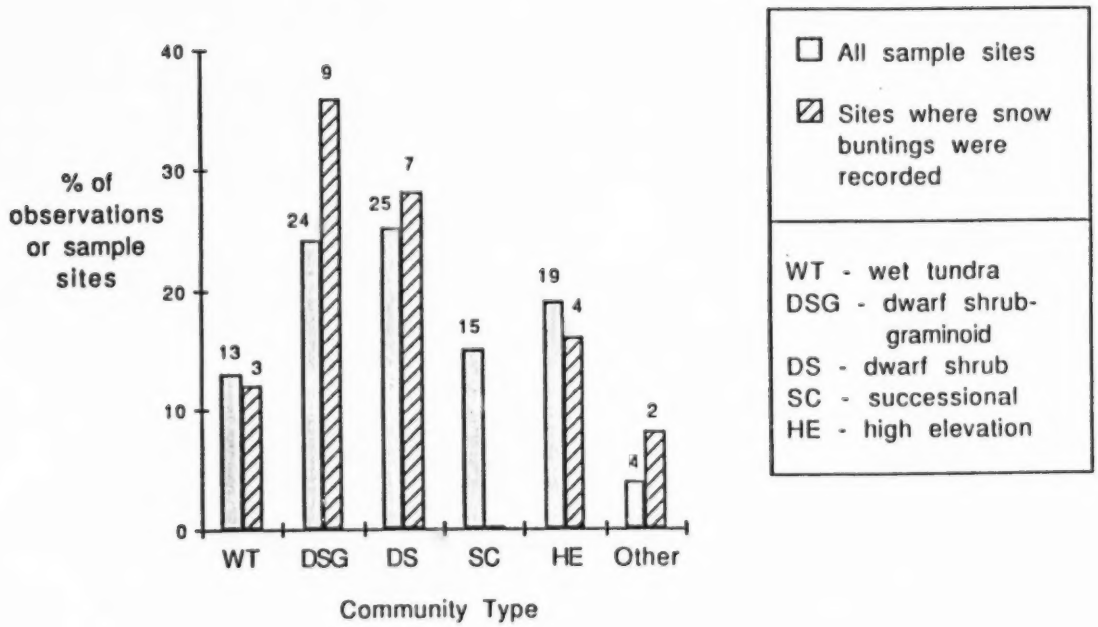

Appendix 1. Surficial deposits and plant communities found at 100 sample sites and 29 of these sites where Canada or snow geese droppings were recorded.



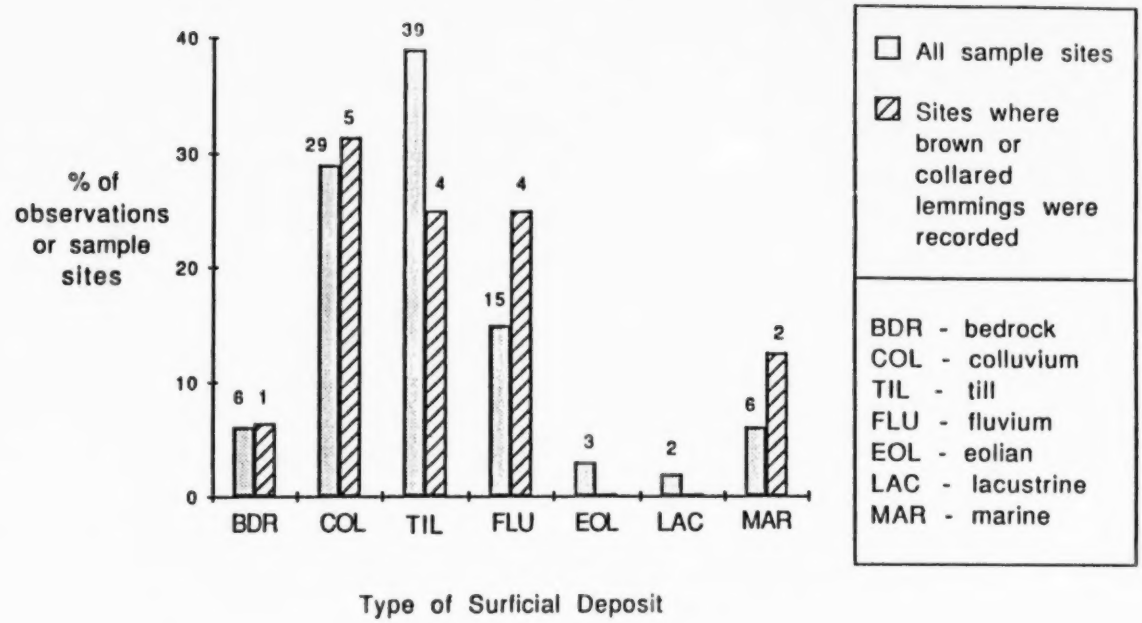



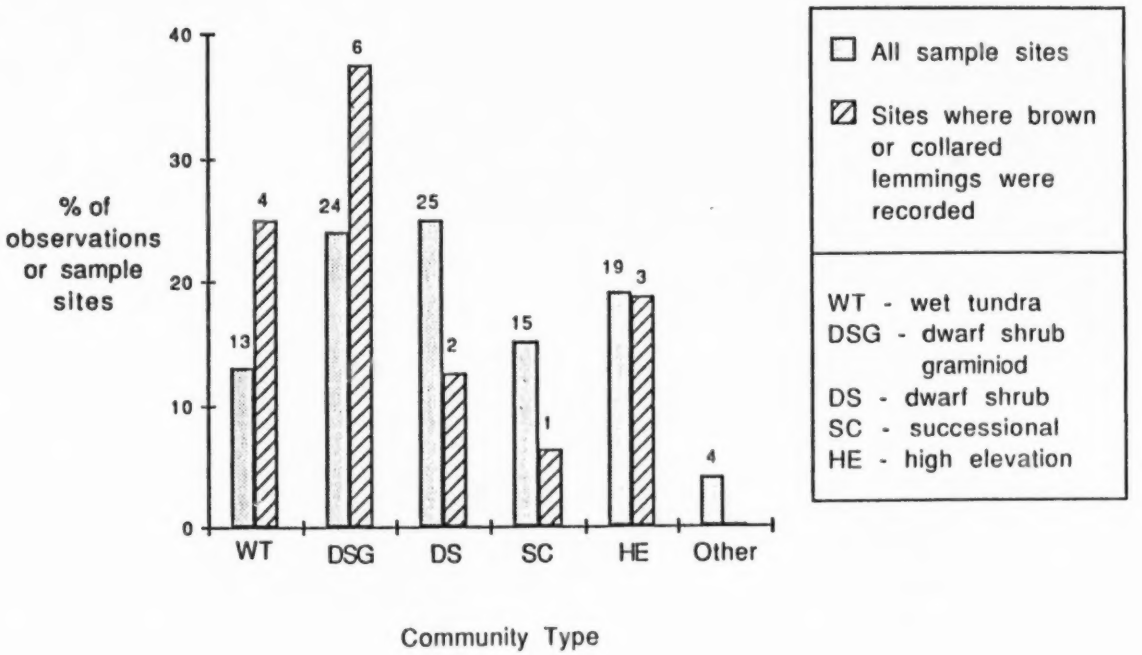

Appendix 2. Surficial deposits and plant communities found at 100 sample sites and 32 of these sites where droppings of rock ptarmigan were recorded.



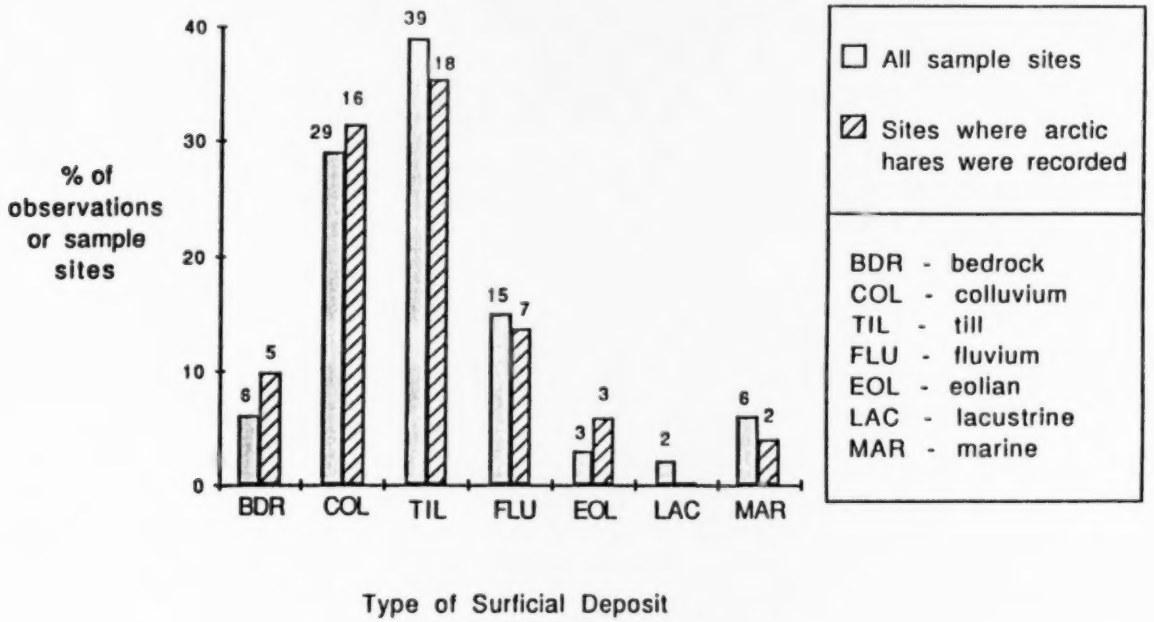



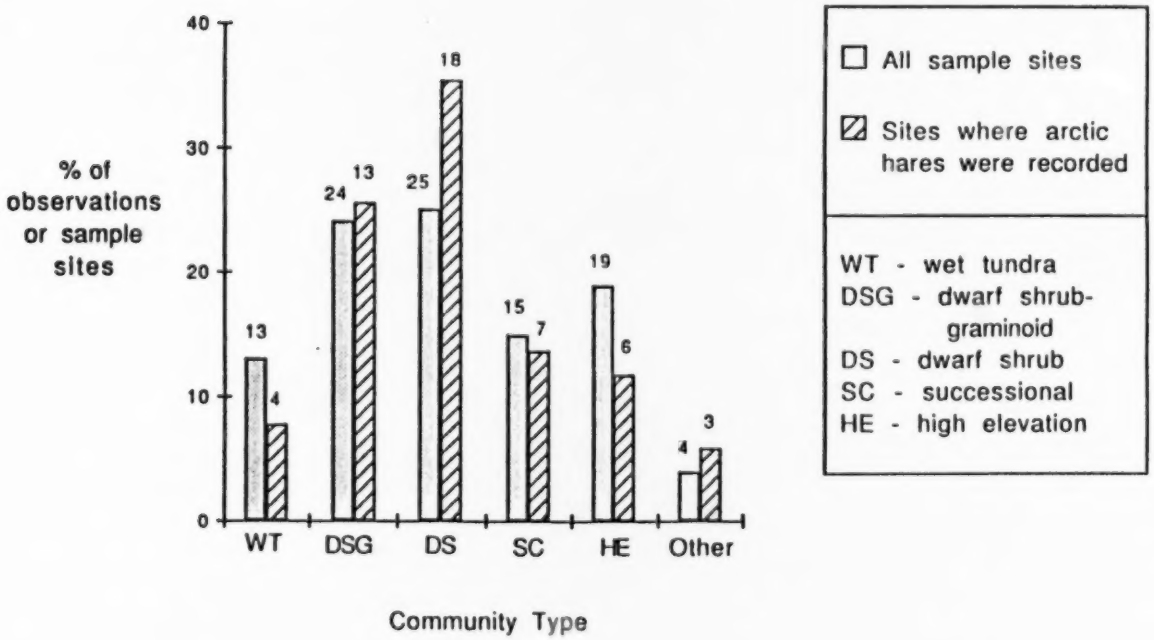

Appendix 3. Surficial deposits and plant communities found at 100 sample sites and 25 of these sites where snow buntings were recorded.




Appendix 4. Surficial deposits and plant communities found at 100 sample sites and 16 of these sites where droppings of lemmings were recorded.




Appendix 5. Surficial deposits and plant communities found at 100 sample sites and 51 of these sites where droppings of arctic hares were recorded.

APPENDIX 6. Ground cover (%) of shrubs, herbs, mosses, and lichens at 100 sites where vegetation was sampled and the number of these sites where geese, rock ptarmigan, snow buntings, lemmings, and arctic hares were sighted.

| | | Ground cover (%) ± SE | | | | |
|---|---|---|---|---|---|---|
| Species | N | Shrub | Herb | Moss | Lichen | Total |
| Goose[a] | 29 | 19±3 | 24±3 | 23±4 | 15±3 | 65±5 |
| Rock ptarmigan | 32 | 19±3 | 17±3 | 13±3 | 25±4 | 62±5 |
| Snow bunting | 25 | 17±3 | 16±3 | 19±4 | 26±4 | 60±5 |
| Lemming[b] | 16 | 17±4 | 22±3 | 28±6 | 14±4 | 69±8 |
| Arctic hare | 51 | 17±2 | 13±2 | 16±3 | 24±3 | 58±4 |
| All sample sites | 100 | 14±2 | 14±2 | 15±2 | 19±2 | 52±3 |

[a] Canada or snow goose.

[b] Brown or collared lemming.